

Measurement of Maternal Perceptions of Support and Control in Birth (SCIB)

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Abstract

Background: High control and support during labor are associated with improved birth outcomes and increased maternal satisfaction with the birth experience, but measures of control and support are varied and often unidimensional. This paper reports the development and validation of a questionnaire measure of support and control in birth for use in research on birth experience and outcomes.

Methods: Study 1 interviewed women after birth ($n = 10$) to identify important dimensions of control and support. In study 2 ($n = 402$), the Support and Control in Birth (SCIB) questionnaire was developed, with three dimensions of internal control, external control, and support, which was completed by women who had given birth.

Results: Principal components analysis identified a 33-item, three-component solution, which accounted for 55% of the variance and had good reliability (Cronbach's alpha 0.86-0.93).

Conclusions: Overall, these studies suggest the SCIB provides a reliable and comprehensive measure of support and control in birth.

Introduction

EVERY YEAR, APPROXIMATELY 4.1 MILLION women give birth in the United States,¹ and 0.6 million give birth in the U.K.² Research suggests that between 10% and 15% of these women will develop postnatal depression,³ and up to 2% may develop posttraumatic stress disorder (PTSD) after birth.^{4,5} Recent studies suggest that anxiety disorders may be underestimated in the postnatal period and may actually be more common than depression, with up to 16% of women suffering some type of anxiety disorder, such as panic, phobia, acute adjustment disorder, or PTSD.^{6,7} Anxiety disorders are also likely to be comorbid with depression.⁷⁻⁹ This suggests that each year up to 1.5 million women in the U.K. and United States may suffer from some form of psychological problem after birth.

The experience of birth is likely to play an important role in psychological outcome. Although the majority of women are satisfied with their experience of giving birth,¹⁰ there is increasing evidence that a negative birth experience may be associated with postnatal symptoms of PTSD and depression.^{4,5,8,11} Research suggests a woman's birth experience may be determined by a range of factors, such as support, control, levels of pain, and obstetrical interventions.¹²⁻¹⁵ A better understanding of the factors that contribute to the ex-

perience of childbirth is, therefore, important in order to minimize psychological distress as a result of this event.

In particular, there are good theoretical and empirical reasons for examining control and support in relation to birth outcomes. For example, psychological theories of stress responses, depression, and PTSD emphasize the importance of control in physical and emotional responses to stress. A lack of control has been suggested to be important in psychological outcomes, such as the development of learned helplessness¹⁶ and trauma responses.¹⁷ In relation to physical health, Walker¹⁸ suggests that low control (both personal and external) during an important health event can cause depression, and uncertain levels of control may lead to anxiety.

In birth research, various aspects of control have been associated with satisfaction with birth,¹⁹ perceiving birth as traumatic,²⁰ and symptoms of depression.^{14,19,21} Whereas control appears to be important in psychological responses to birth, measurement of control has varied between studies, with little clear consensus of how control should be defined or measured. Many earlier studies measured control as a single overall dimension, for example, "How much control did you have during labor?"²⁰ This means the relative importance of different aspects of control, such as control over emotions, control over reactions to pain, or control over accessing and receiving information, was not examined.

Studies that use multidimensional measures of control typically develop their own measure, and these vary in the dimensions they cover. For example, two key studies carried out by Green and Baston²¹ and by Slade et al.¹⁹ explored control over what staff were doing, control over own behavior, control during contractions,²¹ and personal control of pain, control of panic, staff control of pain, control over medication, and pain relief.¹⁹ Some of these scales also included items assumed to contribute to control, such as duration of labor, using exercises, and body position. The measures used in these studies are a useful improvement on unidimensional measures, although reliability and validity information is rarely reported.

Measures of control for which reliability and validity information are available include nonspecific measures, such as the Perceived Control Scale,²² or birth-specific measures that examine control as part of a broader construct during birth. The main example of this type of scale is the Labor Agency Scale, which measures perceived mastery and control during labor.²³ This questionnaire was found to have a single factor solution accounting for 73.7% of the variance, with factor loadings ranging from 0.36 to 0.79. It was also found to be reliable, with a Cronbach's alpha of 0.93. The scale includes items that measure a variety of constructs including control (e.g., "I had a sense of not being in control"), women's beliefs about mastery (e.g., "I felt incomplete and like I was going to pieces"), items that reflect self-efficacy (e.g., "I experienced a sense of success"), emotions during labor (e.g., "I experienced a sense of great anxiety"), and appraisal of their behavior during labor (e.g., "I felt good about my behavior during labor"). Research using this scale finds that high scores are associated with satisfaction with labor¹⁴ and low scores are associated with anxiety during labor²⁴ and postpartum PTSD.²⁵ It is difficult to discern, however, if these findings are due to control during labor or the other constructs included in the scale—or indeed any combination of these. A further questionnaire was developed to assess control over pain during birth,²⁶ although this only covers one dimension of control that may be relevant to women's experience and response to birth. Thus, although there is a range of measures of control available, there is currently no comprehensive scale that focuses on different dimensions of control during birth without overlap with broader constructs, such as beliefs and desires about control.

A further variable with a strong theoretical and empirical basis for its importance in birth outcome is support from healthcare professionals during labor and birth. As with studies on the effects of control during birth, however, there is no consensus about what constitutes support and how it should be measured in childbirth. Studies have used single items, such as, "How supportive were staff in your labor?"⁸ or used more comprehensive but unpublished questionnaires.²⁷ One measure has been proposed that includes tangible, informational, and emotional support,²⁸ but no psychometric information was provided.

Thus, similar to the measurement of control, validated measures of support that have been used with birth are often not specific to birth, for example, the Significant Other Scale,²⁹ or measure support from the perspective of healthcare professionals. The main example of this is the Labor Support Questionnaire,³⁰ which measures what types of support nurses think are important to provide during labor. This

makes it less suitable for measuring laboring women's experience of support. However, psychometric evaluation of the Labor Support Questionnaire suggests that support in labor has many dimensions, such as tangible support, emotional support (reassurance, creating control security and comfort; and caring behavior), informational support, and advocacy.

In summary, it can be seen that control and support are likely to be important in psychological outcomes following birth and are also likely to be multidimensional. However, there is currently no comprehensive validated measure of these constructs during birth. The current study, therefore, aimed to develop a comprehensive measure of control and support during birth. This paper reports the development and validation of the Support and Control in Birth scale (SCIB) through two studies. Study 1 was a pilot interview study to identify the main dimensions of control that are important to women during birth, and study 2 reports the subsequent development and testing of the questionnaire.

Materials and Methods

Study 1: Exploring dimensions of control

Design. A qualitative interview study of control during childbirth was carried out. Interviews from 10 women, taken 1–7 days after birth, were analyzed to find out more about women's experience of control during birth and factors that helped to increase or remove control. This pilot study was designed to highlight the main aspects of control during labor that would be relevant to the majority of women. It was not designed to provide an exhaustive list of control themes, nor was it viewed as the sole source of questionnaire items; instead its aim was to guide the structure of the questionnaire.

Sample. Participants were recruited from maternity wards of a London teaching hospital 1–7 days postpartum. All could speak English fluently. Women were excluded if their babies were stillborn or in the special care baby unit or if ward midwives thought it was inappropriate to approach them for any reason. Eighteen women were asked to take part in the study over the course of the 6 weeks, and 14 agreed. Four interviews were lost due to technical problems with the recording equipment. Participants had a mean age of 32 (range 21–39). Five participants had given birth to their first baby, one to her second, two had given birth to their fourth baby, and two to their seventh. Eight of the women were white British, one was black British, and the other was of Asian origin. Eight of the women had spontaneous vaginal deliveries, one had a ventouse delivery, and the tenth had a planned cesarean section.

Methods. An exploratory semistructured interview schedule had been developed that attempted to elicit information from participants on a wide range of aspects of control during labor, for example, whether women valued personal control and what made them feel in or out of control. Questions were open-ended to encourage women to talk at length about their experiences. The following questions were used:

- How important do you think it is to be in control during labor?

- Can you describe a part of your labor when you felt in control?
- Can you describe a part of your labor when you felt that you weren't in control?
- During your labor, were there any other times when you felt in or out of control?
- What aspect of control was most important to you?
- How do you feel about your experience of giving birth?

Procedure. Ethical approval was obtained from the hospital research ethics committee. Women were approached on maternity wards by the researcher with the help of the midwives. This researcher had had no previous contact with participants and was not involved in their care. Care was taken to liaise with midwives so that women were not interrupted at a difficult time. If participants expressed an interest in taking part in the study, it was explained with the help of an information sheet. If participants were willing to take part, consent forms were signed. Interviews took place on the ward during a quiet period, with curtains drawn to ensure a measure of privacy. Interviews were tape-recorded and have been made anonymous.

Analysis. Interviews were transcribed verbatim, and qualitative analysis was performed using WinMAX computer software (Verbi Software, Marburg, Germany). Inductive thematic analysis was used where dominant themes were identified through careful examination of the data.³¹ This type of analysis was chosen because it attempts to describe women's experience without interpreting phenomena. Following Boyatzis,³¹ thematic codes were developed through reading each interview transcript carefully and identifying emergent themes. Codes and themes were then discussed and agreed by the first two authors, then a coding schedule was drawn up that described and defined each theme and included examples of quotes that would be included and excluded. Following this, all transcripts were read again and recoded using the agreed coding schedule. Coded segments within each code were checked for consistency to increase reliability of coding.

Results. Analysis of the transcripts identified three major themes: women's experience of control, factors influencing control, and support, and these three themes formed the basic structure on which the questionnaire was developed.

Within women's experience of control, women talked about keeping or giving up control, the emotions that accompanied this, and the implications of giving up control. For example the following participant referred to the idea of giving up control: "I think obviously, if I had let myself go, the birth wouldn't have been as, well, easier it could have been more difficult if I was less in control" (P1). Another woman spoke about tiredness affecting her level of control: "I was just too tired and it basically just took, all my focus went and I just said that is it and I gave up and I said I need more help now, and it was just a case of get her out now!" (P3). The experience of being in or out of control, referred to as internal control, was summarized in the following four subthemes: (1) emotions and thoughts, (2) behavior, (3) pain, and (4) physical functioning.

Factors influencing women's perceptions of control, referred to as external control, were summarized in the following subthemes: (1) pain relief (analgesia), (2) information,

(3) environment, (4) decisions and procedures, and (5) birth outcome. Several examples of these themes are given. Use of pain relief was a factor that could increase women's perception of control: "With the epidural, the last maybe 40 minutes I didn't feel pain anymore—so then I was in control" (P9). However, some women found the use of some painkillers, such as nitrous oxide gas or opioids, could reduce mental control because of their side effects. Women felt more in control when they received information, and, conversely, not understanding what was happening reduced perceptions of control: "For a first-time mother anyway it's such an unknown experience and you don't have much control over it" (P8). The environment in which women gave birth was a factor in determining control, with home being a place of more control and hospital resulting in less control: "When I was in the birth centre, I was very much in control of what I wanted to do. I could pace around, I could sit in the pool, I could shout, whereas the minute I got here [hospital], I knew I would be stuck on the bed, and I would be strapped to a monitor and I wouldn't be able to move around" (P3). Lastly, submitting to such procedures as fetal heart monitoring reduced perceptions of control: "I didn't like being strapped to the bed. I really wanted to get up and walk around but they didn't let me; other than that I was in control" (P6).

The theme of support was summarized into the following seven subthemes: (1) coaching and coping techniques, (2) staff attitude, (3) empathy and understanding, (4) reassurance and encouragement, (5) listening, (6) informational support, and (7) support with pain relief. Feeling supported by hospital staff led to women's feeling more in control. The attitude of staff toward women affected their perceived level of support: "I think the midwife made it much better in the fact that she was very sort of 'patient-centered' care, so I felt that I was in control of, more in control, even though I wasn't, you know. It wasn't sort of a do this do that, but sort of advising and using experience rather than sort of directing what was going on" (P8). Being encouraged resulted in higher levels of support: "She was encouraging me all the time, saying, very good, very good, so you know, I knew I was doing the right thing" (P9). Receiving information also made women feel supported and, consequently, more in control. "Yeah, I felt pretty much in control, cause I mean the midwives were keeping me fully informed and everything what was going on" (P2).

Conclusions. This pilot study explored the concept of control qualitatively with the aim of describing the dimensions of control relevant to most women in more detail. The study elicited two dimensions of control (internal control and external control), each having several themes within it. This qualitative exploration also enabled the multidimensional description of women's perception of support during birth. These themes and subthemes were used in study 2 to form the basic structure of the questionnaire on women's perceptions of control and support during birth.

Study 2: Development of the questionnaire

Item generation. Items were generated from a range of sources, including the transcripts of interviews in study 1, a search of birth stories on the Internet from both British and

North American sources (www.childbirth.org, www.baby-world.co.uk and www.birithtraumaassociation.org.uk), and new items generated by the authors, in order to have a selection of statements for each of the 16 subthemes identified in study 1. One hundred three items were generated. Questionnaire items were phrased as statements about the control or support the women had (e.g., "I could influence which procedures were carried out" and "The staff gave me encouragement"), and quotes from the interviews were rephrased if necessary. Items were screened by two expert reviewers. Items with perceived overlap with constructs, such as coping, were identified and removed, for example, "I tried to stay positive to keep control." Ambiguous items or those with disputable meanings were also removed, for example, "I was able to listen to my body." Finally, 68 items were included in the pilot questionnaire, and each section had between 2 and 7 items. A 5-point Likert scale was used for responses, ranging from "completely agree" to "completely disagree." To check the characteristics of the sample, a section was added asking women about the obstetrical characteristics of their childbirth experience.

Questionnaire testing. The questionnaire was put online, and the URL was advertised on U.K. websites. As the role of support and control may be particularly important in difficult or traumatic births,^{32,33} an effort was made to oversample women experiencing these types of births in order to get a full range of responses and to represent the type of population who might be administered this scale. The purpose of the sampling strategy was to adequately test the questionnaire, not to find a representative sample, as this study did not attempt to make population estimates or any type of diagnostic inference. Hence, websites were chosen to attract women with normal births (www.babyworld.co.uk, www.discoveryhealth.co.uk and www.netdoctor.co.uk, www.nct.org.uk) and women with difficult or traumatic experiences (www.babycentre.co.uk [difficult birth debriefing forum] and www.birithtraumaassociation.org.uk). The study was also advertised in a snowball fashion by e-mail. Women were given information about the study on the first page of the site and then completed the questionnaire. Participants were informed that the study had been approved by the University Ethics Committee and that their data would be confidential. A review of data from Internet-based studies suggests that data are generally stable across presentation formats, are no more likely than other methods to be adversely affected by repeat or nonserious responders, and give responses that are consistent with more traditional methods of data collection.³⁴

Sample. A sample of 427 women completed the questionnaire on-line. Twenty-five participants did not meet the inclusion criterion of having given birth within the last 3 years and were excluded from analysis. In the 402 remaining participants, the mean age was 31.18 years (SD 4.65 years). Average time between birth and completing the questionnaire was 0.96 years (SD 0.73, range 0.03–2.99 years). The majority of women had given birth to their first baby (61.3%), and the average length of labor was 13.75 hours (SD 13.82 hours, range 0.5–96 hours). Twenty nine percent of women had their labor induced, 72.3% used pain relief, 15.7% had assisted vaginal delivery, 19.7% had emergency cesarean sec-

tions, and 5.3% had planned cesarean sections. The rates of intervention and complications in this sample are slightly higher than those in the general population in 2004–2005,³⁵ which may be due to the sampling strategy used and the increasing rates of intervention in the U.K.

Results

Data screening

Missing data. In cases with ≤ 3 data points missing ($< 5\%$ of data per participant), missing points were replaced with the participant's mean score on that subsection of the questionnaire, calculated from the items that they did complete.³⁶ Therefore, 0.28% of data were replaced with the participant subscale mean. Cases with > 3 data points missing ($n = 15$, 3.7% of sample) were excluded from the principal components analysis. These cases were examined to see if there were particular birth types that meant questions were not relevant to these participants. Of these cases, 6 had a planned cesarean section (29% of all planned cesarean sections), 1 had emergency cesarean section without labor (1% of all emergency cesarean sections), and 5 had a labor of ≤ 3 hours. Therefore, for 12 of these 15 participants, the time to receive support or make decisions during labor was short or nonexistent.

The pattern of missing data suggests that women who experienced certain types of birth may have difficulty completing some items in the questionnaire. In view of the quantity of missing data, instructions for how to answer a question when not relevant were added to the final questionnaire. It is suggested that women are instructed to answer in the middle of the Likert scale "Neither agree or disagree" when a question is not relevant, thus scoring 3, which is close to the mean score on each subscale.

Skewness. Patient satisfaction-type data are frequently skewed, and this was expected in this dataset despite the attempt to sample a broad range of women. Highly skewed variables do not enable discrimination between different outcomes and may lack predictive power. The assumption of normality is also important if results are to be generalized beyond the study sample.³⁷ Items that were skewed were also likely to have a low SD (correlation between skew and SD = 0.80). Therefore, items were eliminated if their skewness was > 1 . Thirty-three items were eliminated using this criterion. After elimination of these variables, 1 participant with 4 missing data-points previously no longer had missing data. Items were also screened and removed if they were correlated with other items > 0.9 (0 items), or not significantly correlated with other items (1 item, correlated at < 0.2 with $> 97\%$ of items: "I lost control of my physical functions"). Thirty-four items were, therefore, entered into the principal components analysis.

Principal components analysis

Principal components analysis was used to summarize the variance in the responses to the scale. Cases with missing data were excluded listwise, leaving 388 cases. Sample size was adequate, with at least 10 participants per variable and exceeding 300 participants.^{36,37} Further, the Kaiser-Meyer-Olkin mea-

sure of sampling adequacy was 0.94, suggesting the sample was adequate for this analysis, and Bartlett's test of sphericity was significant (chi-square (528) = 8880.9, $p < 0.001$), suggesting the data were suitable for principal components analysis.

The scree plot showed inflections after the first and third components, the first component accounting for 39.9% of the variance and the next two components accounting for a further 8.9% and 7.0% of the variance respectively. The next component accounted for 4.3% of further variance. Taking into account the three dimensions that emerged from the qualitative study, a three-component solution was accepted that accounted for 55.8% of the variance. The solution was rotated with oblique rotation (direct oblimin; delta was set at zero³⁷), as components were not hypothesized to be independent. Loadings of >0.4 were accepted, and items were removed if they had cross-loadings of ≥ 0.3 . One item was removed because of high cross-loadings ("I reached a point where I did not care what happened as long as it would be over"), and the analysis was run again. The final solution containing 33 items and three components, with full item names, is shown in Table 1.

The mean scores for the subscales (and SDs) were 3.29 (SD 0.97) for internal control, 3.27 (SD 1.17) for external control, and 3.69 (SD 1.06) for support. Responses on the 5-point Likert scale were numbered from 1 to 5, and negative items were reverse scored, so that 1 indicates low control or support and 5 indicates high control or support. Reverse-scored items are indicated in Table 1.

Item scales

All items loaded onto the component that corresponded to the one they were assigned to in the original development of the questionnaire. Items of control over reactions to the pain, emotions, and behavior all loaded onto the internal control component (10 items). Items referring to procedures, decisions, and information all loaded into the external control component (11 items). Finally, all the support items loaded to form a support subscale (12 items). Thus, the structure with which the questionnaire was developed was clearly maintained in the principal components analysis, yielding three subscales of similar sizes.

Reliability

Alpha coefficients. Cronbach's alpha was calculated for the scale as a whole and was 0.95, which is above the level of 0.7 proposed as acceptable.³⁸ Alphas were calculated for each subscale of the 33 items retained in the principal components analysis. The alphas of each component were 0.86 for internal control, 0.93 for external control, and 0.93 for support. High alphas would be expected because the components were generated by the principal components analysis and because they each have 10 or more items.

Intercorrelations among components. The correlations among the three components were computed. Associations among components would be expected, as components were hypothesized to be conceptually linked.²¹ Internal and external control were moderately associated (0.55), as were internal control and support (0.51). Support and external control were more highly correlated (0.69).

Length of time since birth. Because of the wide range of time since birth in this sample, further analyses were carried out to check that this did not adversely affect women's perceptions of support and control during birth. The data file was split by median time since birth (291 days) and principal components analysis run on both groups. Items loaded onto the three components identically in both groups, and similar amounts of variance were explained by the solutions (52.9% for births <291 days previously and 58.7% for births >291 days previously). The data were further analyzed to see if time since birth was associated with scores on the subscales. There were no associations of length of time since birth and scores on support and control subscale (r ranged from 0.008 to 0.120, ns).

Discussion

These studies aimed to produce a scale that could be used to measure women's perceptions of support and control during birth, as the literature suggests these constructs might influence psychological well-being after childbirth. The resulting 33-item SCIB questionnaire has a three-component structure of (1) internal control, that is, control over oneself, including physical symptoms, emotions, and behavior, (2) external control, that is, control over events and the environment, including procedures, decisions, and accessing information, and (3) support from healthcare professionals, including coaching, staff attitude, empathy, encouragement, listening, and providing information. The psychometric properties of the SCIB also compare well with other published scales in the same field, notably the Labor Agency Scale.

This three-component solution is consistent with the qualitative exploration of control in study 1, which guided the structure of the questionnaire. The distinction between external and internal control is also consistent with previous research²¹ and theoretical models of control during health events.¹⁸ Green and Baston's research²¹ indicated that support from staff was related to perceptions of control, which is consistent with the intercorrelations between the support and control subscales found in this study. This scale can be taken forward to further understanding of the relationship between support and control during birth. Although they are usually highly related, they are likely to be separate constructs. For example, a woman might feel supported but think she has no control over events, such as during an emergency cesarean section. Clarifying the distinction between support and control and identifying how these constructs are related to psychological outcomes will have implications for clinical care. Currently, U.K. guidelines focus on giving women choice or control during their maternity care³⁹ rather than emphasizing support, and it may be that this is not the best strategy in terms of women's psychological outcomes.

Evidence for the effect of support during birth is currently inconsistent, which could be due partly to differences in measurement, outcomes, and methodology. Reviews of the effect of continuous one-to-one labor support from laywomen (doulas) on birth outcomes in countries where continuous support is not part of usual care have found that women with support were less likely to have analgesia, instrumental delivery, and cesarean section and were more likely to report being satisfied with their experience.⁴⁰ However, this

TABLE 1. COMPONENT LOADINGS OF SUPPORT AND CONTROL ITEMS ($n = 388$)

Items	Component		
	1	2	3
Internal control			
1 The pain was too great for me to gain control over it ^a		0.81	
2 I was overcome by the pain ^a		0.78	
3 I was able to control my reactions to the pain		0.70	
4 I was mentally calm		0.69	
5 I was in control of my emotions		0.67	
6 I felt my body was on a mission that I could not control ^a		0.63	
7 Negative feelings overwhelmed me ^a		0.57	
8 I gained control by working with my body		0.50	
9 I could control the sounds I was making		0.47	
10 I behaved in a way not like myself ^a		0.47	
External control			
11 I had control over when procedures happened			0.92
12 I could influence which procedures were carried out			0.88
13 I decided whether procedures were carried out or not			0.85
14 The people in the room took control ^a			0.75
15 I had control over the decisions that were made			0.73
16 I could get up and move around as much as I wanted			0.70
17 People coming in and out of the room was beyond my control ^a			0.69
18 I chose whether I was given information or not			0.61
19 I could decide when I received information			0.59
20 I had control over what information I was given			0.57
21 I felt I had control over the way my baby was finally born			0.55
Support			
22 The staff helped me find energy to continue when I wanted to give up	0.86		
23 The staff seemed to know instinctively what I wanted or needed	0.82		
24 The staff went out of their way to try to keep me comfortable	0.81		
25 The staff encouraged me to try new ways of coping (such as breathing)	0.81		
26 The staff realized the pain I was in	0.79		
27 The staff encouraged me not to fight against what my body was doing	0.79		
28 I felt the staff had their own agenda ^a	0.69		
29 I felt like the staff tried to move things along for their own convenience ^a	0.64		
30 I was given time to ask questions	0.64		
31 The staff helped me to try different positions	0.61		
32 The staff stopped doing something if I asked them to stop	0.60		
33 The staff dismissed things I said to them ^a	0.55		
Eigenvalues	13.2	2.9	2.3
% Variance explained	39.9	8.9	7.0

^aItem is reverse scored.

effect of providing continuous support in labor has not been replicated in countries, such as Canada, where high levels of support are part of usual care.⁴¹ For example, providing additional support in a system that already has high levels of support may not have the same effect on outcomes as a perceived lack of support, or even negligence. In line with this, U.K. and Australian studies have found an association between perceived lack of support during birth and PTSD symptoms.^{8,27} These results, therefore, suggest a place for the SCIB to provide a valid and reliable measure of support and control during birth with which to examine the relationships among support, control, and birth outcomes.

There are a number of limitations to the current development of the SCIB. It is important to consider how the analyses of the questionnaire may have been affected by the length of time between birth and completing the questionnaire and by the sampling techniques used. There are data in the literature on recall bias, and it has been documented that

women's memory of birth experience may change over time.⁴² In the on-line sample, women were responding about births that had occurred up to 3 years previously, and it is possible their responses to the questions may have been affected by the time lapse. Because of this, we ran analyses to determine if time since birth was likely to be a confounding variable. We did not find that length of time since birth affected either the component solution of the questionnaire or responses on the subscales. This suggests the questionnaire can be used reliably with women at varying time points within 3 years of birth. However, it must be considered that in the postnatal period, the presence of psychiatric symptoms, such as anxiety or depression, may change women's responses about the birth. It is not clear how stable responses may be for individuals over time, and further research should include establishing test-retest reliability and understanding how responses change in the presence of symptoms of psychopathology.

In the on-line study, women who had difficult births were deliberately oversampled to increase variance on the response scales. The strength of on-line sampling is that it enables recruitment of women who have had a broad range of experiences in a number of institutions across the country. This sampling method is open to criticism, however, in that it is unrepresentative of the population. Further research should confirm the component structure of the questionnaire in community samples.

A further limitation of the SCIB, which emerged during its development, is that women who had planned cesarean sections or labored for a very short time found some items difficult to complete, as highlighted by the pattern of missing data in study 2. These items might not be relevant to these women's particular experience. We, therefore, suggest this is addressed by adding clear instructions on how women should respond to the occasional item that might not seem relevant. This issue of missing data where women had cesarean sections suggests future research is needed to determine if different aspects of control or support are more relevant to this subgroup of women. The SCIB may help examine this further. In random cases of missing data, the authors recommend replacing missing values (up to 5% of the data per participant) with the individual's subscale mean.

In conclusion, the development and analyses of the SCIB questionnaire suggest it is a reliable and valid multidimensional measure of maternal perceptions of support and control during birth and that support and control during birth may be important in psychological outcomes. Support and control should be examined in future research in relation to such outcomes as maternal satisfaction or psychopathology. If the link between these variables and psychological outcomes is substantiated, it will increase understanding of what is important in maternity care and may lead to improvements in the provision of care. Current work is also exploring the adaptation of this scale for measuring expectations of support and control during birth, as well as support and control during birth in fathers.

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